

## **Remarks**

### **I. Status of the Claims**

At the time that the Office Action of June 16, 2008 was mailed, the claims pending in the present application were claims 38-57. Of these, claims 39, 40, 50, 51, 53, 54 and 57 have been cancelled herein and new claims 58-64 have been introduced. Thus, upon entry of the present amendments, the claims pending in the application will be 38, 41-49, 52, 55, 56 and 58-64.

### **II. The Amendments**

Claims have been amended to specify that processes are directed to the production of L-threonine. The words "as a product" have been added in certain instances to indicate that this amino acid is, in fact, the final product of the claimed processes. Applicant believes that it should be apparent that a "process for producing L-threonine" has L-threonine as its final product. Nevertheless, additional support for this amendment may be found in original claim 3.

### **III. Claim Objections**

On page 2 of the Office Action, claim 53 and 54 are objected to as being duplicates of one another. This objection has been obviated by the cancellation of the claims herein.

## **The Rejections**

### **I. Rejection of Claims Under 35 USC §112, Second Paragraph**

On page 3 of the Office Action, the Examiner rejects claim 55 (and dependent claims 56-57) as being indefinite for failing to specify what is being determined in step b). In response, Applicant has amended claim 55 to indicate that the thing being determined is L-threonine. It is therefore submitted that the Examiner's rejection has been overcome.

### **II. Rejection of Claims Under 35 USC §112, First Paragraph**

On pages 3-7 of the Office Action, claims are rejected based upon the written description and enablement requirements of 35 USC § 112, first paragraph. The Examiner

appears to argue that these requirements are met for processes for the production of L-threonine but not with respect to the production of other amino acids.

In response, Applicant has restricted claims to processes for producing L-threonine and it is therefore submitted that the Examiner's written description and enablement rejections have been overcome.

### **III. Rejection of Claims Under 35 USC §102**

On pages 8-10 of the Office Action, claims are rejected under 35 USC §102 as being anticipated by either Kruse-1 (US 2007/0092950) or Kruse-2 (WO 2005/014841). The earliest priority date for Kruse-1 is August 3, 2003 and the earliest priority date for Kruse-2 is August 4, 2003. Since the present application claims priority to DE 103 03 571.0, which has a filing date of January 30, 2003 (*i.e.*, earlier than the priority dates for Kruse-1 and Kruse-2), the Examiner suggests that one way to overcome the rejection is to file an English language translation of the priority application to establish that it is substantially the same as the application filed in the US. Applicant has enclosed such a translation herein, it is submitted that the present rejection has therefore been overcome.

### **IV. First Rejection of Claims Under 35 USC § 103**

On pages 10-21 of the Office Action, the Examiner repeats a rejection of claims based upon the allegation that they are obvious in light of the combination of Volz (*Prot. Sci.* 8:24-28 (1999)); Enos-Berlage (*J. Bacteriol.* 180:6519-6528 (1998)), Verkhovskaya, *et al.*, (*Microbiol.* 147:3005-3013 (2001)) and Promega Technical Bulletin No. 117 (September 2002)).<sup>1</sup> These references have all been thoroughly discussed in previous responses filed by Applicant. Rather than repeat this discussion, Applicant will try to focus on the arguments that are either newly raised by the Examiner in the present Office Action or that the Examiner seems to be primarily relying upon.

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<sup>1</sup> The Examiner also later cites a reference by Lee (*Trends Biotechnol.* 14:98-105 (1996)) as teaching methods of fermenting cells using a fed batch procedure. Applicant does not believe these teachings alter the arguments herein in any way and therefore will not specifically focus on this reference.

Comments Concerning Content of the Cited References

The present invention is directed to a method of producing L-threonine by fermenting bacteria that have been engineered to reduce or eliminate *yjgF* gene function and then either isolating the L-threonine produced or recovering the L-threonine and then determining the amount of this amino acid present. The Examiner has alleged that this is obvious in light of the combined teaching of the references cited in the Office Action and relies primarily on the teachings of Volz and Enos-Berlage.

The Examiner argues that Volz teaches the deletion of the *yjgF* gene as a means of studying its function and suggests that teachings regarding the use of cells that have undergone such a deletion to produce amino acids are implied or inherent. However, Applicant can see no justification for this assertion. A suggestion to study the function of a gene by creating bacteria in which it is attenuated does not imply that such bacteria should be used to produce L-threonine or any other amino acid. Similarly, a method of producing L-threonine (which as expressed in Applicant's claims includes the isolation of the amino acid or its recovery and assay) is not inherent in the teachings of Volz, *i.e.*, the deletion of the *yjgF* gene in cells does not, of necessity, require the use of the cells to produce amino acids.

A similar argument is made with respect to the Enos-Berlage reference. The Examiner again suggests that the use of bacteria containing a mutated *yjgF* gene to produce amino acids is implied or inherent in the teachings of the reference and Applicant again submits that there is no justification for this. The only relevant teachings in this reference actually appear to suggest that, if anything, reducing *yjgF* function will probably decrease amino acid production. For example, page 6526, first column, second full paragraph under the "Discussion" section, the reference states:

We suggest that the *yjgF* mutation results in the partial block of at least one step in isoleucine biosynthesis (by an as yet undefined mechanism) subsequent to the reaction catalyzed by threonine deaminase . . .

Thus, *yjgF* mutations are suggested to block, not promote, bacterial amino acid production, at least with respect to isoleucine. Applicant can not see any way that this can be construed as implying that bacteria with decreased *yjgF* function should be used to produce L-threonine.

The remaining references that are cited, Verhovskaya, the Promega Bulletin and Lee, merely teach generalized procedures for knocking out genes, for purifying DNA from bacteria and for fermenting bacteria. The procedures described were not applied to the *yjgF* gene and Applicant can see nothing implied or inherent in these references that make the claimed invention any more obvious than the references of Volz and Enos-Berlage.

As discussed more fully below (under the section entitled "Legal Considerations"), the mistake that the Examiner appears to make is to confuse the inherent characteristics of an invention that has been reconstructed using several references with teachings that are inherent in the references themselves.

*Comments Regarding Isolation or Recovery of Amino Acids*

Applicants have previously indicated that one clear difference between the methods claimed and the combined references cited is that the claims require either the isolation or the recovery and assay of L-amino acids (now L-threonine). To the extent that procedures in references cited by the Examiner may enrich a preparation in amino acids, they represent transient steps of an overall process that ultimately eliminates rather than isolates or recovers amino acids. The Examiner does not dispute this but argues that claims should be interpreted as broadly as they reasonably can during prosecution and that, when this is done, transient isolation of compounds is sufficient to meet claim limitations.

In response, Applicant submits that the only reasonable interpretation for a claim directed to a process for producing L-threonine is that the end product will be L-threonine. A procedure that ultimately isolates something else cannot reasonably be viewed as meeting the claim requirement of isolation or recovery of the amino acid. Applicant has amended claims herein to emphasize that the L-threonine isolated or recovered is a final product and not an intermediate.

*Legal Considerations*

Patent law provides that if a single reference expressly or inherently discloses all the elements of a claimed invention, then the invention is anticipated. Patent law also provides that the implied or inherent teachings of references may be considered when combining

references. However, Applicant submits that the Examiner has not done either of these things in rejecting claims. Instead, it appears that the Examiner has made an obviousness rejection by combining references to arrive at a process that is not the same as the one claimed and has then alleged that the claimed process would be inherent in the one arrived at (a novelty rejection). As Applicant has stated in previous responses, there is no justification in patent law for this approach and no such thing as inherent obviousness. To be anticipated a single reference must disclose all elements of an invention; one cannot combine multiple references and then reject claims as being inherently anticipated based upon the combination.

**V. Second Rejection of Claims Under 35 USC § 103**

On pages 22 and 23 of the Office Action, the Examiner rejects claims 48-57 as being obvious in light of the Kruse-1 and Kruse-2 references discussed above. As noted in the rejection, Kruse-1 and Kruse-2 only constitute prior art under 35 USC § 102(e). As such, the present rejection may be overcome by establishing that the claims presently pending have an earlier prima facie date of invention than the references. Applicant has done this by submitting an English language translation of the priority document for the application which shows that all of the claims now pending are entitled to an invention date of at least January 30, 2003.

**Conclusion**

In light of the discussion above, Applicant believes that all of the Examiner's rejections have been overcome. It is therefore respectfully requested that these rejections be withdrawn and that the claims now pending in the application be allowed. Early notice to this effect is earnestly solicited. If, in the opinion of the Examiner, a phone may expedite the

prosecution of this application, the Examiner is invited to call Applicant's undersigned attorney at (240) 683-6165.

Respectfully submitted,

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